DOCUMENT RESUME

ED 175 169 EC 115 059

AUTHOR Kakalik, James S.
TITLE Issues in the Cost and Finance of Special Education.
INSTITUTION Rand Corp., Santa Monica, Calif.
REPORT NO Rand-P-6217
PUB DATE Sep 78
NOTE 54p.
AVAILABLE FROM Rand Corporation, 1700 Main Street, Santa Monica, California 90406 ($5.00)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Cost Effectiveness; *Costs; *Definitions; Financial Policy; *Handicapped Children; *Incidence; Mentally Handicapped; Physically Handicapped; Program Budgeting; *Resource Allocations; Student Costs

ABSTRACT

The paper reviews issues related to the financing of special education for physically and mentally handicapped children. Considered are the following issues said to be unresolved despite improvements in special education and increases in funding: definition and prevalence of handicapped children and the nature of their service needs; service delivery arrangements; and cost, finance, and resource allocation. Implications of broad and narrow definitions of handicapped children are considered, and difficulties with prevalence and incidence figures are discussed. Problems of special education cost analysis are seen to include treatment of joint resources and joint causes and of fixed costs, and the lack of readily available and comparable data. Research on special education finance is reviewed, and funding formulas are examined. (CL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED175169

EC

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ISSUES IN THE COST AND FINANCE OF SPECIAL EDUCATION

James S. Kakalik

September 1978

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Rand Corp.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

P-6217
$5.00

FC 11 5059

Copyright © 1978
The Rand Corporation

The Rand Paper Series

Papers are issued by The Rand Corporation as a service to its professional staff. Their purpose is to facilitate the exchange of ideas among those who share the author's research interests; Papers are not reports prepared in fulfillment of Rand's contracts or grants. Views expressed in a Paper are the author's own, and are not necessarily shared by Rand or its research sponsors.

The Rand Corporation
Santa Monica, California 90406

ISSUES IN THE COST AND FINANCE OF SPECIAL EDUCATION

James S. Kakalik

The Rand Corporation, Santa Monica, California

INTRODUCTION

This chapter identifies major issues related to the cost and finance of special education for physically and mentally handicapped children, and discusses areas of research needed to help resolve those issues. This study was conducted at The Rand Corporation's Policy Research Center on Educational Finance and Governance, under a contract with the Policy Development Office of the Assistant Secretary for Education, U.S. Department of Health, Education, and Welfare.

Despite current special education expenditures of nearly $5 billion annually, and despite the dramatic changes and great improvements that are taking place in special education, several problems still exist and several major issues are still unresolved. This chapter discusses various sets of issues: issues concerning the definition and prevalence of handicapped children and the nature of their service needs; issues concerning service delivery arrangements; and issues concerning cost, finance, and resource allocation. These sets of issues are all related to special education cost and finance in the sense that resolution of cost and finance questions at least implicitly requires answering other interrelated questions.

This paper was prepared as a chapter for Vol. 7 of *Review of Research in Education,* a publication of the American Educational Research Association, Washington, D.C., forthcoming in 1979. The study discussed in this paper was conducted at The Rand Corporation Policy Research Center on Educational Finance and Governance, under a contract with the Policy Development Office of the Assistant Secretary for Education, U.S. Department of Health, Education, and Welfare.

While other issues are also extremely important, the most imperative special education issue area today is finance and the insufficiency of funds to implement court ordered and legislatively mandated special education services. Specific issues of identification, service delivery arrangements, and cost flow into and define the magnitude of the funding deficiency, while issues of resource allocation flow from it.

In resolving some of the issues identified and discussed in this chapter, value judgments are required. In resolving other issues, new research efforts are required. No attempt has been made in this chapter to resolve any of the issues, since the value judgments or research required for their resolution are well beyond the scope and resources of this brief study.

BACKGROUND

Government spending for the "excess cost" of special education above the cost of regular education was estimated by a recent study to be over $4.7 billion in FY 1976, or about $1200 per physically or mentally handicapped child served (Wilkins et al., 1976). Of this total, the federal, state, and local shares are estimated to be 14 percent, 55 percent, and 31 percent respectively.

Education for handicapped children is in a stage of rapid expansion and evolution. Several major trends are observable: (1) federal and state court rulings and legislation are being implemented making appropriate special education mandatory for all handicapped children; (2) increased numbers of handicapped children are being served; (3) special education expenditures are rising rapidly (approximately

doubling since the early 1970s); (4) increased use is being made of "individualized education programs" designed to meet the specific needs of the child; (5) a shift is underway toward provision of services in the "least restrictive environment" that is satisfactory for the child; and (6) a major shift is evident in both funding and control away from local agencies and toward state and federal agencies.

Despite the large expenditures for special education, the recent legal mandates that handicapped children have a right to an appropriate public education, and recent dramatic improvements in services, several problems still exist: many youth are not receiving needed special educational services, or are receiving the wrong or inadequate services; inequities prevail in the availability of special educational services; gaps exist in the services offered within geographic areas; policy-relevant information on the costs and effects of different services is insufficiently available; coordination of the service system is inadequate; and, most important, the resources devoted to these youth's needs are insufficient (Brewer and Kakalik, 1978).

The 1975 federal Education for All Handicapped Children Act, as well as recent federal and state court rulings and legislation mandating appropriate special education for all handicapped children, will greatly affect both the special education service delivery system and the special education finance system. These systems are now in a state of internal flux and improvement, and their relation to general education service delivery and finance are also changing markedly. Ongoing reforms in the delivery system for special education services have major implications for cost and for finance policy, and both regular and special education finance policy can strongly influence

implementation of desired special education delivery system reforms. Consequently, special education cost and finance issues are of very high current policy relevance.

FRAMEWORK FOR CONSIDERING SPECIAL EDUCATION COST AND FINANCE ISSUES

To adequately consider issues of special education cost and finance, one needs to consider various nonmonetary factors that are inextricably related to finance. For example, the definition of a handicapped child affects the size and characteristics of the population to be served and hence the funds required. The framework used here to structure the various factors begins with the needs of handicapped children and progresses through several stages to questions of how to distribute available funds. These stages are:

- Determination of what characteristics of children are to be considered exceptional, and what special services are needed by children with various sets of those characteristics.
- Determination of the total size and geographic distribution of the handicapped children population, and the amount and geographic distribution of the various services needed by that population.
- Determination of which type of public or private educational or noneducational agency is to provide which services to handicapped children.
- Determination of the programming arrangements educational agencies should make to provide the services for which they have been assigned responsibility.

- Determination of the human and other resources needed to implement those programming arrangements.
- Determination of the cost of using each of those resources and programming arrangements.
- Determination of the total level of funding required to provide all necessary services.
- Determination of the method to be used to allocate funds to local agencies.

People making special education finance decisions ideally would go through each of the above stages, and are at least making implicit judgments about each of these stages. However, in practice, different people are often making the decisions at various stages. For example, the state and local legislators may be the primary funding decision-makers whereas local education agencies primarily determine who is handicapped and the service programming arrangements to be used. And, decisions are not necessarily made sequentially in each of the stages listed above. The decision process is iterated from year to year so that the overall level of funding and its distribution in the previous budget cycles have affected the current service programming arrangements and working definitions of a "handicapped child."

Different types of criteria on which to base special education finance decisions include: adequacy of funding in relation to need in terms of both quantity and quality of services; equity of fund distribution; anticipated effects of service delivery in terms of quality of life and in terms of future economic benefits; comprehensiveness of types of services and programming arrangements in relation to need;

control and coordination of services; compatibility with regular education finance and service delivery; and efficiency (Brewer and Kakalik, 1978; Bernstein et al., 1974).

Issues related to each of the above stages in the framework are listed below in the form of questions, and will be discussed in subsequent sections.

Definition of Handicapped Children and Their Service Needs

- How is the term "handicapped child" to be defined?
- What are the educational and other service needs of children with various handicapping characteristics?

Magnitude of the Handicapped Population and its Service Needs

- What is the total size and geographic distribution of the handicapped child population, and the total amount and geographic distribution of the various services needed by that population?

Assignment of Service Responsibility

- What type of educational or other agency should have responsibility for what services to handicapped children?
- How can interprogram and interagency coordination and cooperation be effectively enhanced?

Programming to Provide Services

- What programming arrangements should education agencies use to provide services to what groups of handicapped children?
- What role should various levels of government play in these programming and other decisions?

Resource Requirements

- How many and what types of specialized personnel and other resources are required to provide an appropriate education to all handicapped children?

Costs

- How much does each of the different special education programming arrangements cost?

Funding

- How much money is needed to provide appropriate special education to all handicapped children?
- What special educational and related services are to be provided to whom if available funding is less than the total required?
- What role should various levels of government play in providing the needed funding?

Fund Distribution Formulas

- How are the total funds to be allocated equitably to different groups of handicapped children in different geographic locations?

DEFINITION OF HANDICAPPED CHILDREN AND THEIR SERVICE NEEDS

Every child is physically or mentally exceptional in some way. The issue is one of degree; how exceptional in what ways must a child be before society deems it desirable to provide special services not provided to "normal" children? No one would disagree with the premise that a severely retarded or a totally deaf child is handicapped, but the choice of whether or not to provide special services is more

difficult for children with mild degrees of exceptionality. A fundamental truth is that sufficient funds are not available, and are not likely to be available in the near future, to provide every conceivable service to every individual child. So decisions must be made on definitions of who will be provided special services.

One can go a step beyond considering physical or mental impairment and define handicaps in terms of impaired functional capability or need for services resulting from the physical or mental exceptionality, e.g., the degree of difficulty the hearing impaired child has in understanding "normal" speech. But with limited funds, the same arbitrary cutoff problem exists for functional ability or need for service scales as for physical or mental impairment scales.

Obviously the definitions of handicapped children--the cutoff point or points that are chosen on whatever scale or scales of exceptionality--will affect the number of children eligible for special services and the funding level required to finance those services. Similarly, the funding levels reasonably likely to be available, and the likely costs and benefits from providing or refusing to provide special services, will affect society's definition of handicapped children.

The definitions used change with time and vary from one educational jurisdiction to another. For example, definitions of those children eligible for special education services in recent decades have shifted from exclusion to inclusion of: the more severely handicapped children; the very mildly handicapped children; and some children below the age of five years.

In addition to changes and differences with time and place in the words used in definitions, nearly all definitions of handicapped

children (including the federal definitions) are nonspecific in the sense that they permit a great deal of latitude on the part of local educational agencies and personnel in whom they actually decide are handicapped children. Because the interpretations of definitions are not necessarily comparable across jurisdictions, an individual child might be "handicapped" if he or she lived in one location but "normal" if he or she lived elsewhere. Or, the child might be categorized as having one type of handicap in one location and another type in another location, even if both locations had the same set of possible categories of handicapping conditions. Especially nebulous terms in common use include "learning disabled," "educationally handicapped," and "emotionally disturbed."

Just as the definitions of exceptional children differ with time and across educational jurisdictions, the definitions of service need also differ with time and geographic location. The definition of service need for moderately retarded children in many jurisdictions used to be 24-hour-a-day residential care in a mental institution, with little attempt to provide specific educational services to help them develop toward their maximum potential. Today the prevailing notion is to provide special education and training services to develop the child's potential to function in the least restrictive environment possible, rather than providing interminable 24-hour-a-day custodial care.

Classification of children is related to finance in at least four ways: the definition of who is to be served affects the amount of funds required; the definition helps to convey to legislators and executive branch personnel, who decide to appropriate funds, the type of children's

needs that will be served; the precision of the definition affects the precision of targeting of the money and financial accountability; and it may be desirable for fund distribution formulas to explicitly allocate differing amounts of money depending on the cost for the category of child being served.

In the next year or two, the implications of resolving the definition issue by using a broad definition of handicap (and hence a high estimate of the number of handicapped children) include the following: first, sufficient funds are not likely to be available to adequately serve all of those children defined as handicapped under a broad definition. Hence, government will either inadequately serve many children, adequately serve some while labeling but not serving others, or not identify all unserved individuals and hence not find and serve all high priority handicapped children. Second, there is a potential loss of some legislators' support for increased special education appropriations because they perceive that the broad definition of handicapped children includes great numbers of children with relatively minor problems whom the legislators feel are not sufficiently "handicapped" to need special service. And third, a broad definition acknowledges that large numbers of children cannot be adequately educated without at least some special education services, even though those services needed may be relatively minor or required only briefly. Over the next ten years or so, the use of a broad definition will result in consistency over time so that legislators and courts are not confronted with the uncertainty of a definition that periodically expands to require more money. The use of a broad definition from the start would indicate to funding sources

the magnitude of the long term problem and enable more rational planning and budget allocation.

At the other end of the spectrum, a narrow definition of a handicapped child could be used now--a definition that matches the number of children to be served with the currently available resources. Perhaps the solution is to use both broad and narrow definitions. That is, narrowly define high priority types of handicapped children who can all be served with available resources, but broadly define all types of handicapped children who should be served in the long run when and if adequate resources become available. However, to be most useful, priorities should be set in specific terms rather than in vague generalities such as "severely handicapped" children.

MAGNITUDE OF THE HANDICAPPED POPULATION AND ITS SERVICE NEEDS

To adequately plan services for handicapped children, the number of such children and their service needs must be estimated, and their geographic distribution must be estimated. If definitions of exceptionalities were in terms that indicated service needs, and if the incidence of the exceptionalities in the population were known, then estimating the magnitude and distribution of the handicapped child population and its service needs would be relatively easy and would not be a major issue in special education finance. Unfortunately, current definitions are not closely related to service needs (knowing someone is mentally retarded or learning disabled or partially sighted tells you very little about what special education is required for them). And data on incidence rates of handicaps in the general child population are appallingly lacking. In some cases, vague and differing

definitions such as for "learning disabled" children result in wide variations in incidence estimates (e.g., from 1 percent to 20 percent and more for learning disabilities in the school age population) (Fleischmann, 1972). In some cases, it is difficult to measure and evaluate a potential handicap in a child (e.g., is a particular child seriously emotionally disturbed or not?) In some cases, available incidence data are based on nongeneralizable or poor quality data (e.g., data from a very limited geographic area, or from asking parents if their child is handicapped). Available data on incidence rates for handicaps in school age children have been reviewed in numerous studies and need not be discussed in detail here (Rossmiller, 1970; Brewer and Kakalik, 1978; Craig, 1976; Craig and McEachron, 1975). The estimates of the total prevalence of handicaps among school age children are typically in the 9 to 12 percent range.

In virtually all types of handicaps, data usually are not available disaggregated by characteristics of the population that may be correlated with the incidence of handicaps (such as age, sex, race, and family income) so that one cannot discuss with high confidence the differences in prevalence rates in different geographic areas. For example, the prevalence of certain handicapping conditions is thought to be strongly age dependent (Craig and McEachron, 1975); e.g., speech disorders are much more prevalent among elementary school age children than among those of high school age.

While it is obvious that incidence rates depend on definitions, definitions will indirectly depend on incidence rates. For example, if special education is mandatory by law and a broad definition yields a high incidence rate (and hence costs that are viewed as excessive),

then pressure may be applied to narrow the definition of who is to be considered handicapped.

What is really needed in order to be definitive on incidence rates is a national survey of the general population with in-depth evaluation of the characteristics of each child in the survey by professional evaluators. These evaluations should not merely conclude that a child is or is not handicapped, but rather should make data available on the child's abilities on a variety of dimensions. This would enable one to assess incidence on a range of different definitions and in terms of service needs.

The main problem with a national population survey with in-depth professional evaluation of each child contacted is its high cost. I did not estimate the cost of such a survey in detail, and any estimate would depend on how large a survey is conducted and how in-depth the evaluation of each child would be. However, such a definitive general population survey on incidence is clearly a multimillion dollar research effort. Just to do an in-person survey costs at least $80 per interviewee, and in-depth evaluation of the children by professionals would bring the cost to at least $200 per child according to Rand Corporation survey expert D. Hensler.

The new federal Education for All Handicapped Children Act deals with incidence by saying payment will flow in proportion to the number of children served, but not to exceed 12 percent of the children ages 5 through 17 in any state. That 12 percent represents a somewhat liberal estimate of the number of handicapped children based on the best available but very deficient data. The 12 percent cap is in part an attempt to inhibit overcounting of children as handicapped in order

to qualify for more federal funds, and it is in part an inherent aspect of the definition of how exceptional a child must be to be considered handicapped under the federal definition. Note that an overall cap of 12 percent does not prevent overcounting for one type of handicap and undercounting for another. Also, no provision is made for geographic variations in incidence that might exceed the 12 percent.

The implications of not having reliable data on incidence include: not knowing the degree to which court and legislatively mandated special education has been implemented; and not knowing the magnitude of the unmet need and hence not being able to adequately plan programs or accurately estimate the cost for meeting that need.

ASSIGNMENT OF SERVICE RESPONSIBILITY

Another issue affecting the finance of education agencies is whether the education agency or some other agency should have responsibility for various types of services to handicapped children. Service needs are diverse and special educational assistance is only one such need. Others are: prevention, identification of handicapped children, service coordination and direction to appropriate servers, medical services, mental health services, residential living of varying levels of independence, vocational services, and income assistance.

Education agencies have traditionally provided special education and training services to children not living in residential institusions; the assignment of responsibility for these services is not an issue. However, in some areas the following questions arise: which agency is responsible for education and training services to children in residential institutions? Should the education agency be responsible

for screening all children to attempt to find all cases of exceptionalities? Should education agency personnel provide mental health services such as chemotherapy and psychotherapy or should a mental health agency provide certain services upon referral of the child? How should responsibility for vocational services be divided between education and vocational rehabilitation agencies? What is the school's appropriate role in referring to other agencies for provision of services not available in the schools, and in coordinating all services? The answers to these questions are different in practice across education agencies, and will have a great impact on the amount of funds required by education agencies.

PROGRAMMING TO PROVIDE SERVICES

Once decisions have been made as to what services an education agency is to be responsible for, the matter of the amount of funding required is not resolved since many different programming arrangements can be made at different costs for providing the same type of basic service. The issue is what programming arrangements should be provided for what groups of handicapped children.

By different programming arrangements we mean different ways of providing service that have significantly different costs. For example, different programming arrangements for providing similar educational services might include a residential institution, a special school, a full-time or part-time special classroom, a resource room, an itinerant teacher, a specialist consultant assisting the regular classroom teacher, different staff intensities per pupil, different mixes of professional, paraprofessional, and nonprofessional staff, and more or less extensive use of technology.

The same programming arrangements (at the same costs) may be used for significantly different curricula or teaching methods or basic educational services, so from a viewpoint of determining required finances, it is not necessary to specify precisely everything that occurs between staff members and children; it is only necessary to specify programming to the extent that it significantly influences costs. A deficiency in the important Rossmiller (1970) study on special education cost is that cost data were presented by type of handicap but not by the programming arrangements made for providing services. It is not surprising that great variation across school districts was found in the cost of serving a particular type of handicapped child, since the programming arrangements obviously are not the same in all districts. (Clearly, many other factors also contribute to interdistrict cost variation, as is discussed later.)

Programming arrangements have tended to follow a trend over time toward service in less restrictive environments: for many years residential schools were widely used; a decade ago self-contained special classroom arrangements were predominant; and today "mainstreaming" is in vogue. Serving children in the least restrictive, most normal environment consistent with their educational needs is certainly desirable. However, definitive information currently does not exist on how much various types programming arrangements cost, let alone on how effective they are on various dimensions for children with different types of educational needs.

P. L. 94-142 strongly influences costs by requiring states to establish "procedures to assure that, to the maximum extent appropriate,

handicapped children, including children in public or private institutions or other care facilities, are educated with children who are not handicapped, and that special classes, separate schooling, or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. . . ." The key unknowns in the above statement on programming arrangements are what is "appropriate" and what is "satisfactory." Research on costs and effects is needed to adequately define "appropriate" and "satisfactory."

The issue of what programming arrangements are best for what handicapped children, and hence the issue of how much an appropriate education costs, cannot be fully resolved without additional research. Research on the relative costs and effectiveness of providing (or not providing) different types of special education for children with different exceptional education needs should receive high priority over the long run. Until those research results are available, programming decisions must of necessity be based largely on theoretical arguments, dogma, and the amount of money available. Because of the complexity of the problem, and the need to ascertain the long-term effects of special education, a multi-year program of research would be desirable. The needed research on cost is ongoing at The Rand Corporation. The first steps in a multi-year program of research on special education effectiveness would be a planning study to determine the best means of conducting the effectiveness research, and a study to develop measures of effectiveness.

Although programming arrangements and finance decisions are inextricably intertwined, they are often considered and made relatively independently, even if both are made at the same level of government. In the recent past, programming and finance decisions were made primarily at the local and state levels. The current trend is for higher levels of government to assume more and more responsibility. States are supplying more funds for regular and special education, largely to increase the equity of expenditures across local districts and to shift the burden from property to other forms of taxes. The federal government is not only active in R&D, in personnel and material development, and in service to low incidence populations such as deaf-blind children, but now with the advent of P.L. 94-142 may be providing special education funds amounting to 40 percent above the average annual expenditures per public school child in the United States. If Rossmiller's (1970) estimate that special education is about twice as expensive as regular education is correct, then the maximum federal contribution authorized by P.L. 94-142 is about 40 percent of the "excess cost" of special education. This shift in finance from lower toward higher levels of government will further uncouple finance and educational placement decisions.

RESOURCE REQUIREMENTS

The issue of the aggregate quantity of human and other physical resources of each type required (i.e., how many teachers with what specialties are required? How many classrooms of what type? How many aides?) is often stated separately but is really dependent on the other issues discussed previously. If you can specify how many handicapped

children of each type are to receive what services via what programming arrangements for how long, then specifying the resources required is relatively simple. If you have not resolved those prior issues, then the issue of the resources required is virtually insoluble.

The problem of determining the cost of a special education program is one of first specifying the resources (such as facilities, various types of staff, equipment, materials, and transportation vehicles) needed to conduct the program and then translating these resource requirements into an estimate of program cost. The actual resource categories to be included in any given resource-cost analysis are all those that can vary with the special education policy options being studied.

Adequate definition of the resource categories and the resultant costs will depend on having good special education program descriptions. Various program descriptive categories might include: type, mix, and number of personnel used; size of the student group served; and organization (e.g., separate specialist room or specialist in the regular classroom, year round or academic year only).

While determining the resources required is an essential step to calculating costs, it also allows more meaningful interdistrict comparisons than is possible from using local cost data alone. Interdistrict price differentials for resources make comparisons based on local expenditure data less meaningful than comparisons based on resources or some standardized cost of resources (e.g., comparisons for determining the equity of service distribution).

Explicit attention to resources makes matters such as adjusting for inflation and interdistrict differentials in the "cost-of-special-

education" easier. Attention to resources as a stage in a series of decisions from definitions of handicaps to fund distribution formulas ties staff and facility requirements to programming and financing decisions in a meaningful way. Attention to resources also points up the need to consider the costs of resource development, some of which may not even appear in local agency expense records. The costs of training and retraining of both regular and special teachers are examples of such resource developmental costs.

COSTS

How much do various types of special education cost? Until ongoing research is completed, no one really knows. This apparently simple question is one of the major unresolved issues in special education. The primary reason for the uncertainty about costs is that educational agencies seldom compile and report cost data separately for a particular type of programming arrangement for a particular type of handicapped child. Also, the available data invariably combine together some expenditures for service to handicapped children with those for nonhandicapped children, and combine together some expenditures for one special education programming arrangement with those for another. Hence, research is needed to collect and analyze expenditure data and resource use in local agencies to learn the costs of providing special education by various alternative programming arrangements. This research is currently underway at The Rand Corporation. Detailed data have been collected from a nationwide sample of local education agencies and results will be available in 1979.

Cost information is needed for a variety of purposes: (1) to aid in planning and evaluating education programs for individual children; (2) to facilitate better education system planning and evaluation by enhancing understanding of the costs of different types of services and programming arrangements; (3) to aid in determining the levels of financing required to provide an appropriate education for all handicapped children; and (4) to allow adjustment of finance formulas to match need and enhance equalization efforts and reduce fiscal incentives for inappropriate classification and inappropriate educational placements of children. In sum, I believe the impact on handicapped children of having improved cost information for any and all of the above purposes will be major.

The term "cost" does not have a universally acceptable definition, since in practice it is used in many different ways for different purposes. However, in general terms, cost means "the value of benefits foregone" when resources are used one way rather than another (Fisher, 1970). The specific definition of cost will vary with the decision alternatives being considered. To a great extent, benefits lost or foregone when a resource is utilized one way rather than another can be meaningfully expressed in dollar terms. In some cases, however, dollar terms alone are insufficient, and multivariate measures of cost must be utilized.

Resource-cost models express the relationship between the human and other resources discussed in the previous section, and measures of cost. Those resource-cost models might, for example, associate a dollar figure with each of the different special education programming

arrangements. The next section on financing is concerned with current expenditures or disbursement of dollars, which are not necessarily the same as costs.

The issue of the cost of special education cannot be resolved without consideration of the previously discussed issues. In attempting to resolve issues summarized in this chapter, what one really wants to do is improve decisionmaking in special education finance and programming by better understanding the interrelationships between cost, resource use, program activities, student characteristics, school characteristics, and student progress based on multiple measures of effects. Even if those other issues were to be resolved, however, determining cost is neither uniquely nor easily accomplished. Before summarizing research that has been conducted to date and is currently underway on the cost of special education, it is useful to review some of the problems or difficulties one encounters in such research.

First, the question arises concerning what type of cost is of interest. For example, does one want to know the added cost of implementing a specific type of program in a specific local district, or does one want to compare the costs of different types of programs independent of the districts? From the era when simple student-teacher ratios were used as a measure of total resource utilization in an educational program, and when the use of varied local prices of resources confounded the interpretation of data, cost analysis in educational planning took a major step forward when the notions of the comparable replication cost and incremental cost were transferred from previous areas of application to the area of education (Haggart, 1971). In estimating the increase in cost if a particular program is to be

implemented in a specific district, the district specific costs for the additional resources required by the proposed program must be used and the resulting estimated program cost is the incremental cost. However, for purposes of evaluating and comparing both regular and special education programs independent of the district, the cost of interest will be the comparable replication cost. After definition of a program in terms of its objectives, its types of students, its educational process, its resource requirements, and so forth, a standard cost is used for common resources thereby normalizing the cost of that common resource in various programs and districts. The reason for the use of standard cost in that type of decision analysis is obvious. If actual district specific costs were used for each resource, the resulting program costs would have diminished meaning in comparing programs, since the differences among programs would reflect both differences in the programs as well as differences in teacher salaries and other local prices of resources. Of course, the standard cost used might need to be adjusted to reflect justified and systematic cost variations across districts, as is discussed later in this section.

A second problem is exemplified by the use of the term cost, not dollars. In many cases, the costs can be meaningfully expressed in dollars. In certain special cases, however, other measures of cost may have to be used. Consider, for example, the decision problem where the use of specially skilled teachers who are in very short supply is being contemplated. In a "specific resource constraint" case like this, the cost of those teachers in terms of "benefits foregone," if they are used where someone else with different or lesser skills would suffice,

may or may not be fully reflected in the salary schedules or by some monetary factor above salary. Hence one may need to express the cost of a program as a multivariant quantity, e.g., (1) number of specialized teachers utilized, and (2) dollars representing the cost of all resources utilized. Another resource for which it is difficult to estimate a realistic associated dollar cost is a resource, such as a volunteer parent, for whom no direct expenditure of funds is made.

A third common type of cost analysis question present in the special education area is that of how to treat joint or shared resources and hence joint costs. While certain elements of cost can be directly identified with specific programs, other elements of cost are necessary in the provision of a service but cannot be readily and directly identified with a single specific service or program. The National Center for Educational Statistics, "Finance Accounting . . . Handbook II, Revised" (1973), cites several different bases for prorating or allocating indirect costs which are joint or shared by more than one program. The basis used for allocating a particular joint cost will depend on how the joint resource is shared. Examples of joint or shared resources are the district superintendent, a single administrator for several special education programs, and a single teacher or facility for providing special education aimed at more than one type of child. The problem is simplified to the extent that one can justifiably allocate the costs among programs, and to the extent that one can identify and exclude from the analysis those resources that will not change in response to special education program changes being considered (and hence are not relevant costs for those particular special education program decisions). In general, however, there may not always be a

right way to allocate joint resources and costs to individual programs or children who share them; thus, the resource-cost analysis may need to recognize certain joint resources as such in the analysis rather than arbitrarily prorating all of them simply to distribute all costs. Treating certain shared resources as such in the analysis also has the advantage that the economies of shared resources can be explicitly analyzed. From the policy viewpoint, sensitivity analyses can be conducted to assess the cost impact of the degree of sharing of the joint resource on the decision to be made (e.g., the number of children jointly using the classroom or the number of programs under the same administrator.) One joint resource to pay special attention to is the regular classroom teacher who serves both handicapped and "normal" children. The problem is not as simple as counting the fraction of the teacher's time spent on the handicapped children, because the class size or time spent on normal children may have been reduced due to the "mainstreaming" of the handicapped children; hence, one needs to consider what the class size and time spent on normal children would have been without mainstreaming, and count the reduction due to mainstreaming as a "lost opportunity" or "benefits foregone" cost factor.

A fourth set of problems or questions that must be considered has to do with time. How long will resources be used? How long will they last in use? Will they be used 9 or 12 months a year? Still another aspect of the time problem is the discount rate used to adjust costs incurred at different points in time to a common reference time to permit the "present value" of costs to be compared. There is no fully acceptable answer to this discount rate problem, but through the use of a range of rates the sensitivity of conclusions to the rate chosen can

be tested. A third aspect of the time problem in cost analysis is the need to account for the future effects of inflation (or deflation) in the value of the dollar in purchasing resources. Despite the problems encountered in dealing with the time aspects of costs, the timing of the impacts of both costs and effects of special educational programs is usually a major aspect of decisionmaking on the programs. To be most useful, therefore, resource-cost models and analyses must provide for explicit treatment of the time phasing of cost impacts.

A fifth problem, with aspects in common with both the joint cost problem and the problem of how to treat time, is the issue of how fixed costs are treated. Costs can be broadly defined into the two categories of fixed costs and variable costs. Which category a given cost falls into can depend on the decision being made, but for an example, assume that the cost of a facility is a fixed cost. Then the question is how to handle the fixed cost when the frequency of resource utilization can vary. That is, the number of children placed in the classroom (a jointly used resource) can vary. Two incorrect ways of handling such fixed cost factors are: (1) assigning the entire cost to the initial time period of use or to the initial user of the resource (e.g., not using some depreciation method of accounting for a facility); and (2) ignoring such cost factors entirely in all decision analyses. Here, as in the joint cost area, the best way to treat the problem is to recognize a fixed cost as such in the resource-cost model, specify what assumptions are made in the analysis about the rate of utilization of that resource, and do an analysis of the sensitivity of cost to variations in the rate of utilization assumption. Thus, in obtaining

comparable replication costs to compare programs, one needs to not only standardize the cost of common resources, but may also need to standardize the utilization rate assumed. Another way of handling the variable utilization rate (also known as scale or activity level) is to explicitly show the costs and policy implications as a function of different utilization rates. The variable utilization rate difficulty in cost analysis also exists for staff resources, e.g., pupil/teacher ratios.

In resource-cost modeling and analysis, attention also needs to be paid to the implications of the systematic variation in the cost of resources according to factors such as geography (region of the country, inner city vs. rural, etc.) and time (inflation in the value of the dollar). The same single standardized costs and standardized utilization rates (if used at all) cannot be simplistically used for every purpose. For some issues, standardized costs and utilization rates that are a function of geography or other factors may be needed. An example is the "economy of scale" effect on costs, e.g., a small rural district may not have enough handicapped pupils to fully utilize a particular kind of specialist, but must hire one or collaborate with another district if those few children are to be served appropriately. These systematic variations in cost are directly related to what "successful" programs can be realistically recommended for implementation at what cost in what type of schools (e.g., large city vs. rural). The implications of necessary and systematic variation in costs and rates of utilization of resources, by time, by geography, by size of the school or by other major factors, need to be considered. Such information could possibly be used to construct a cost-of-special-

education index (see Furno and Cunes, 1971; Grubb, 1976, for a discussion of cost-of-education indices).

The need for appropriate cost-of-special-education indices arises from the facts that (1) a dollar does not purchase the same resources at different times and places, and (2) different handicapped children need different mixes and quantities of resources. For example, because of purchasing power variations, it is not possible to directly compare dollar outlays in different places and years in a fully meaningful manner. Yet, such comparisons are essential for special education policymaking. Distribution of resources to achieve equality of educational opportunity is difficult to do without cost-of-special-education indices since the dollar does not have a constant purchasing power for special educational resources across geography and over time, and since children's needs also differ. There are at least two different types of cost-of-special-education indices. One measures price variations for a given programming arrangement. A second type measures cost variations across programming arrangements due to use of different mixes and quantities of resources. Neither index is easy to construct. For example, the large cost component due to teachers' salaries cannot be easily indexed because the supply of teachers willing to work at a given wage will depend on the attractiveness of the school program and community, and because individual teachers are not a uniform resource; they vary in training, experience, and other dimensions that may be related to their "quality" as an education resource.

We note that the cost of a particular type of special education program may not vary among districts in the same manner as the cost of education. (For example, because of economy of scale effects due to

the low incidence of certain types of handicaps, the variance in cost across districts is probably higher for special than for regular education programs.) Hence, a cost of special education index may be significantly different than a cost of education index.

Perhaps the biggest problem in doing meaningful cost analysis is the lack of readily available and comparable data. The account records of educational institutions are of diverse form and quality and have in the past been maintained primarily for purposes of daily operation and finance control. (For a discussion of financial and program cost accounting in education, see National Center for Educational Statistics, 1973.) Few school systems can readily describe the resources used in their various special education programs. Only rarely will even local, much less state, school records contain cost information in the form desired for cost analysis. Local districts use differing definitions of handicaps and cost categories; and they often expend money from one cost category on both handicapped and nonhandicapped children. Given that schools will use a wide variety of accounting and resource-cost recordkeeping methods, and that they will almost never have all cost-related information available in the form needed for cost analyses, cost analysis data collection instruments and procedures have to be flexible and capable of uncovering and recovering resource-cost information in whatever form it may be available in the school and district, or else new accounting systems must be implemented. But new accounting systems are not practical in the short run. Given existing education agency data and accounting systems, even data on special education expenditures (which are much more likely to be directly available in school records than are data on special education costs) cannot be

readily and reliably obtained via questionnaires or reporting forms given to local districts for completion. Thus, to resolve the cost of special education issue, The Rand Corporation is collecting data in person, and is developing and testing methods of estimating required cost information from available information. It is clear that development of high quality special education cost information from current information systems requires on-site collection of data at the local level and transformation of that local data into standardized comparable terms for analysis.

Previous studies on the cost and financing of special education have shed some light on the subject, but are far from fully illuminating. Perhaps the best multistate empirical study that has been completed to date was by Richard Rossmiller and others under the National Education Finance Project in 1970. That study involved collection and analysis of cost data in five states from 24 selected local districts with "exemplary" special education programs. Special education costs were found to vary widely among districts, but averaged about twice as high as regular education costs. Some reasons for the wide variation in cost across districts for the same type of handicap were the differences across districts in programming arrangements, in pupil/staff ratios, in the demographic characteristics of the districts themselves, and in the newness of the programs, none of which were not explicitly accounted for in the analysis. Also, a cost index approach was used in the NEFP study (the index was the ratio of the average cost for a category of handicapped child divided by the average cost for a nonhandicapped child). While the cost index approach has great merit, districts consuming exactly the same amount of special education resources (teachers

and other resources per child) will have different cost indices if they spend differing amounts on nonhandicapped children. Thus, to be more illuminating, comparative analyses across districts should consider not only a cost index of special education relative to regular education but also a different type of cost index measuring the actual resources devoted to a handicapped child in terms of standardized prices of resources. The first type of index is a relative one which would measure the resources devoted to special education relative to those devoted to regular education, while the second type of index would be an absolute one which would measure the total resources devoted to special education independent of price variations across districts. Another shortcoming of the Rossmiller et al., data is that they are from a small sample of districts, and are dated. Costs have changed markedly due to inflation and the rapid evolution and growth of the special education system. Finally, the NEFP project did not have the resources to develop a policy-oriented cost analysis model to fully use and analyze the empirical data collected. Hence, the data were indicative of past expenditures, and did not permit a policy-maker to fully evaluate the current cost implications of using different types of programming arrangements in different types of school districts.

Since 1970, several single state studies have been conducted, most using methodology related to Rossmiller's. (For summaries of these studies, see Bernstein et al., 1974; Marinelli, 1976.) One of those studies by Clemmons (1974) disaggregated costs by type of programming arrangement, but the data are from a small sample within one state and are not generalizable. Another single state study by McLure

(1975, 1976) analyzed special education costs for five categories of resource intensity (essentially defined by the average number of full-time-equivalent pupils per full-time-equivalent teacher); those categories were loosely related to the type of special education programming arrangement.

Some preliminary efforts at cost modeling also have been conducted; the following two are illustrative of significantly different approaches.

A simple cost model developed for a 1973 Council for Exceptional Children (CEC) conference (Taylor, 1973) allowed the model's users to estimate excess costs of different types of program delivery alternatives for different types of handicapped children by using expert opinion concerning incidence rates, the fraction of handicapped children to be placed in each different program delivery alternative, and the prices of resources. The concept of use of a cost model to analyze alternative policies has great merit, although this conference model is only embryonic and using data based on expert opinion alone has its limitations.

Close to the opposite end of the complexity dimension from the CEC conference model is one proposed by the firm of Ernst & Ernst (1974). The firm proposed a detailed professional cost accounting system for education that defines various units of resource use, including ten-minute units of various types of instruction and other contact with the school system. Each ten-minute unit of resource use has a cost associated with it; thus, total cost can be determined by adding the costs of the various units of resource use that define an

educational program. The model was exercised in the report for a hypothetical composite school district using empirical data from districts in one state. The model's main drawback from a policy analysis viewpoint is that it is so detailed that the cost of data collection and analysis may be higher than necessary.

The degree of detail in a cost model that is useful and practical in resolving special education policy issues lies somewhere between those two models noted above.

To resolve this issue of the cost of special education, in July 1977 the U.S. Office of Education's Bureau of Education for the Handicapped funded a two-year study that I and others are conducting at The Rand Corporation. The objective of this ongoing cost data collection and analysis effort is to improve decisionmaking on special education programming and finance by providing accurate and current information on the costs of alternative types of educational placements for children of different ages with various physical and mental handicaps. This study also will produce improved cost analysis methods and models for use by education agency personnel and others concerned with financing and administering special education programs.

The Rand study team collected data in-person from a stratified probabilistic sample of about 75 local and intermediate education agencies in 14 sample states during the 1977-78 school year. The study teams collected all data available from those education agencies on the cost of regular education and the cost of special education by handicap, age range, and educational placement of the child. In addition to collecting budget data, which are very useful but not fully adequate for the purposes of this study, they also collected data on

personnel and other resources used. Approximately 1000 teachers and 250 "related services" personnel were interviewed in depth to find out, for example, how much time regular and special personnel were devoting to various groups of handicapped children in various placements, the amount of extra time spent by regular teachers on handicapped children in the "mainstream," costs of developing individualized education programs, due process costs, in-service training costs, and so forth. This massive new data base on regular and special education costs, and how they compare, is currently being analyzed. Results will be available in mid-1979.

The Rand study is analyzing variations in cost related to factors such as educational placement, handicap, age of the student, pupil/staff ratios, size of the district's program, demographic characteristics of the district, salary scales, and local prices of other resources. The study is considering both (1) the relative cost of special education in relation to general education, as well as (2) the absolute cost of special education measured in terms of the actual resources devoted to a handicapped child. Both local resource prices and standard resource prices are being used, and sensitivity analyses are being conducted. The study also is developing and documenting cost models and analysis methods that are of sufficient detail to be policy-relevant, but not so detailed as to require a new expensive accounting system in order to be used by the local and state education agencies.

FUNDING

The National Advisory Committee on the Handicapped recently indicated that, in education for handicapped children, "the basic overriding

need is of course to close the gap that sees half of the nation's handicapped children not receiving an education appropriate to their needs (National Advisory Committee on the Handicapped, 1976). Existing laws are not ideal in every respect, but the provision of special education is inhibited more today by lack of funding than by lack of legislation. Major issues are: What amount of funds are needed? Who should provide them? And how are funds to be allocated if insufficient funds are available to pay for special education for all those children who need it?

As in previous steps in the progression of issues presented, it is relatively easy to decide the issue of total funds required to meet special education needs if the prior issues of who is handicapped, what programming arrangements are to be made for how many children at what costs, and so forth, are resolved first. In the absence of reliable information on those prior issues, resolution of the issue of desirable funding levels is extremely difficult.

Of course, finance decisions can and are being made in the absence of reliable cost information on various types of programming arrangements, but from the viewpoint of rational decisionmaking, this is not the preferred mode of operation. For example, a frequently used method of projecting the amount of funds required to serve all handicapped children is to multiply past expenditures per handicapped child times the estimated number of handicapped children; this procedure simplistically assumes that past prices and past methods of educating handicapped children will prevail unchanged in the future, and also erroneously assumes that currently unserved children have the same service needs and costs as those currently being provided special education.

Funding levels that are significantly different than desirable levels for current costs may result in programs that are "fat" and inefficient, or levels of service per child that are significantly below those considered "good practice." If the differences persist, what is considered to be standard practice may be considerably different than the good practice that policy analysis suggests is desirable. Another possible implication of a significant difference between costs and funding levels per child is the implicit diversion of funds from one program to another at the local level.

A related issue is what services are to be provided to whom if available funding is inadequate. How should limited available funds be allocated among children with different characteristics and among different services and methods of service delivery? Will some be unserved? If so, who will be unserved (preschool? older youth? rural? low-wealth districts? certain types of handicaps or degrees of severity of handicaps?) Will all be served at an inadequate level? Will some services but not others be provided? With good data on the costs and effects of services for different types of children, these questions could be answered more rationally than they can be now. However, answering them would essentially still be a matter of making value judgments. And one cannot ignore the value judgments by simply saying that special education is mandatory by law in 48 of the states (Weintraub et al., 1976), since that mandatory legislation has not always been fully enforced. A school district may not have actually refused to serve all handicapped children, but a school district may have "ignored" the problem by not identifying all handicapped children.

The federal Education for All Handicapped Children Act deals with the issue of funding requirements by implicitly making two reasonable assumptions: that the incidence rate of exceptional children needing special education does not exceed 12 percent, and that the funds required per handicapped child served per year averages at least 40 percent more than the average annual per pupil expenditure in public elementary and secondary schools in the United States. Until the goal of a free appropriate public education for all handicapped children is met, the matter of priorities is resolved in P.L. 94-142 by assigning highest priorities "first with respect to handicapped children who are not receiving an education, and second with respect to handicapped children, within each disability, with the most severe handicaps who are receiving an inadequate education. . . ." Note that the Act and the associated proposed regulations do not set any priorities among different types of handicaps, do not define "most severe," and the definition of "inadequate" is dependent on state and local practice and policy on what goes into each child's "individual education program."

A major funding issue concerns how much each different level of government (federal, state, and local) should contribute to the total level of funding. Of the total spending for special education in FY 1976, the federal, state, and local shares have been estimated to be 14 percent, 55 percent, and 31 percent respectively (Wilkins et al., 1976). This issue is particularly important to the federal government at this time since P.L. 94-142 represents a major potential shift in the federal funding role in education.

In general, different levels of government can potentially play one or more of the following types of model roles. They can (1)

operate direct service delivery programs; (2) control and regulate (but not necessarily operate) the direct service delivery programs; (3) fund direct service delivery; (4) invest in personnel training, facilities, and other capital; and (5) innovate and stimulate change in service delivery through activities such as research, demonstration projects, and dissemination of information. Each level of government (federal, state, and local) is involved in each of these five different types of activities but in different proportions. For example, even the federal government operates direct service programs such as the Gallaudet University program for deaf students. For a discussion of various types of government roles and the rationales supporting different roles by different levels of government, see Brewer and Kakalik (1978).

Arguments that can be advanced for having higher levels of government provide funding include: (1) certain low-incidence population groups to be served may be so small that it is uneconomical for a single locality (or state) to mount a high-quality program on its own; (2) differences in the ability and willingness of localities to fund education result in differences in educational opportunity for children; (3) without state (or federal) support the local (or state) authorities might underinvest in special education because some benefits of special education (such as reduced rehabilitation and welfare costs) do not accrue to the single locality; (4) there is a large unmet service need, some level of government should meet the need, local governments are not or cannot fully meet the need, and therefore one could argue that the state or federal government should; (5) the inherent ability of higher levels of government to raise increased funds under the current tax

structure may be greater than that of the local level of government; (6) minority populations needing service seem to be able to exert pressure more effectively at the federal level than at the state or local levels; (7) the incidence of handicapping conditions varies geographically and this uneven distribution of handicapped children implies an unequal financial burden; and (8) since special education was made mandatory by state and federal law, one could argue that those higher levels of government should also fund a large share of expenditures.

The principal arguments against increased funding by higher levels of government include: (1) education is primarily a nonfederal responsibility; (2) funds are usually eventually accompanied by controls, and such controls on education policy by higher levels of government may be inappropriate to a particular local situation; and (3) funding by higher levels of government (especially federal) may not be necessary in light of local funds released from regular education due to declining enrollments, and in light of court orders and laws that make delivery of appropriate special education mandatory.

FUND DISTRIBUTION FORMULAS

Once the total amount of state and federal funding that will be available is known, the final remaining issue area is how much each locality or intermediate educational jurisdiction should receive. Criteria for distributing the available funds to help equalize resources in relation to "need," to provide incentive for program improvement, to control costs, or to work toward some other objective, might include such factors as: the number and types of exceptional

children in an area, the number being served, the staff employed, the relative cost of resources in a geographic area, the total or excess cost of the program, the ability of local sources to raise funds, the type of programs to be provided in a geographic area, and the degree to which local programs attempt to meet established standards and objectives. For an overview of general education finance formula issues, see Callahan and Wilken (1976). For an overview of criteria for evaluating school finance programs, see Johns and Alexander (1971).

Various types of special education funding formulas exist, and are summarized briefly below (see Bernstein et al., 1974, and Thomas, 1973).

- o Unit. School districts are reimbursed a fixed sum by the state for each designated unit of classroom instruction (teacher), administration, and/or transportation.
- o Weight. The local district is reimbursed for each handicapped child served on the basis of a multiple of regular per-pupil expenditures, which may vary according to type of educational placement or type of disability.
- o Percentage. A percentage of the full costs incurred by school districts in providing education for handicapped children is assumed by the state.
- o Personnel. A state provides funds to local districts to offset the costs incurred in the hiring of special staff.
- o Straight Sum. The state reimburses local districts a fixed amount of money per handicapped child served.

- o Excess Cost. School districts are fully or partially reimbursed for the excess cost of educating a handicapped child above the average cost of educating a nonhandicapped child.

In reality, the above six categories of formulas, which are often cited in recent literature, are of three basic types:

- o Formulas based on payment for resources (teachers, aides, equipment, and so forth) with regulations on the cost of resources that is allowable and regulations on the resource use per exceptional child served (both unit and personnel formulas fall in this general category).
- o Formulas based on children served with regulation of the cost and use of resources (both weight and straight sum formulas fall into this category).
- o Formulas based on cost with regulation of resource use and children to be served (both percentage and excess cost formulas fall into this category).

Thus, funds are allocated based on one of three factors--children served, dollar cost, or resources--typically with regulation of the other two factors which are not the primary basis for funding.

The implications of using one type of finance formula or another cannot be discussed adequately in the absence of knowledge of the details of how it is implemented. That is, the distribution of funds is usually based on a formula plus numerous constraints that determine and regulate the flow of funds in order to alleviate misuse of funds and prevent excessively high-cost programs. Some services, procedures,

or programming arrangements may be mandated or forbidden. Definitions of handicaps may be specified and ceilings placed on the percentage of children who may be served. Identification and placement procedures and criteria may be specified. Maximum and/or minimum numbers of students to be served by each staff member may be specified. Only certain categories of expenditure or personnel may be eligible for funding or ceilings may be placed on certain expenditure categories. Certain accountability features may be included to help assure the dollars are used for the purposes intended. Or, a ceiling may be placed on certain categories of expenditures. Bernstein et al. (1974) point out that once the programming, cost determination and level of funding decisions have been made, the amount of money received by a district can be the same under any of the different funding formulas. However, note that the choice of a formula and all of its associated constraints and regulations can and will influence district programming decisions in the future. This is due to the feedback and interactive nature of program and finance decisions over time. Hence, the implications and incentives created by different finance formulas need to be considered so that negative implications and incentives can be minimized to the extent reasonable. Nonetheless, it appears that the type of formula used is less important than either the details of the constraints, exceptions, and regulations that accompany the formula, or the total amount of funds available for distribution with the formula.

Some of the possible implications of the use of alternative finance formulas are summarized below:

Formulas Based on Resources

Some problems that have reportedly (Thomas, 1973) occurred with the use of the unit finance system are: maximization of class size to decrease per pupil cost; inability of small school districts to qualify for units for ancillary services and administration; lack of funding in most states for the costs incurred in mainstreaming; inappropriate placement of children in a program with a lower per pupil expenditure when units allocated allow differing class sizes on the basis of a child's disability or some other factor; and the same reimbursement for all programs regardless of cost and/or quality.

Other problems have included: children being unserved because the number of units needed exceeded the number allowed and prorating of available funds was not allowed; districts not offering units because reimbursement was much less than the cost to the local district; failure to reflect in the formula the differences across districts in the cost per unit; and failure to account for differences across districts in ability to raise local funds.

Note that none of the above problems is inherent to the unit financing method and all probably could be resolved successfully through appropriate constraints, regulations, and design of the details of the unit funding system. For example, maximum pupil/staff ratios can be set for particular types of units.

Personnel reimbursement formulas are really only a special and very restricted type of unit formula where only expenditures for human resources are reimbursed. Personnel formulas are much less desirable than unit formulas because they do not permit reimbursement for other

physical resources that may be needed for special education such as facilities, supplies, equipment, or transportation. As such, the use of physical resources may be undesirably low.

Formulas Based on Children Served

Three problems that reportedly (Thomas, 1973) have occurred when the weighted formula approach has been used are: districts with high educational costs will not receive equitable reimbursement unless the multiplier is applied to each district's per pupil cost as opposed to an average state cost; consistency of children's needs within single disabilities implicitly is assumed; and if the same factor is used for all disabilities, districts are discouraged from initiating programs for children with disabilities requiring higher expenditures.

Other problems with this approach could include: maximization of the number of special students per staff member or hiring low-salary staff members to reduce costs since reimbursement may be independent of costs; inability of small districts with very few exceptional children to receive sufficient funds to support special staff members; excessive or otherwise inappropriate classifications of children; placement of children in the lower-cost programming arrangements, or serving them only briefly, since reimbursement may be independent of programming and duration of service; districts not serving some types of children because the reimbursement is much less than the cost, and, if reimbursement is less than cost, possible inequity of educational opportunity due to difference in local fund-raising capabilities. (For detailed discussions of weighting systems in practice, see Leppert et al., 1976, and Marinelli, 1975.)

Again, most of the above problems are not inherent in a weighted formula system and could be resolved by appropriate design of the formula plus constraints and regulations on the quantity and quality of service to be provided to the children. For example, tight regulations on diagnostic and placement procedures could make inappropriate classification and service difficult. And, the weights could be based on the type of programming arrangement needed by a child rather than solely on the child's disability.

Straight sum reimbursement formulas are similar to weight formulas in that both pay a fixed sum times the number of children receiving special education. And, similar difficulties can be experienced with both types of formulas.

Formulas Based on Cost

Both percentage and excess cost formulas reimburse districts based on expenditures rather than numbers of special education resources or students. The following are potential drawbacks of these types of formulas: depending on the percentage of cost or excess cost reimbursed, incentives can exist to inappropriately place children in the least or the most expensive program; without constraints costs can skyrocket; with high levels of reimbursement an incentive may exist to identify nonhandicapped children as handicapped; it is difficult to define excess cost; and a requirement of percentage and excess cost formulas is an accounting system capable of specifying cost and excess cost after they have been defined. Thomas (1973) points out that if excess costs are fully funded, theoretically the district is encouraged to make the best placement for the child because doing so causes no

extra financial burden, and prohibitive costs do not become a major factor in deterring a child from receiving the full range of services. But neither does cost control enter into local decisions as it should.

Any of the above six types of formulas also can suffer the following drawbacks, depending on how they are implemented:

- o Discouraging provision of special education or expensive types of special education to a child because only part of the needed expenditures are funded.
- o Discouraging interdistrict cooperative programs for children with low incidence exceptionalities.
- o Discouraging use of support personnel or equipment in situations when they are as effective as a specially skilled teacher working alone.
- o Not enhancing the equity of total (regular plus special) education funding levels among districts, and perhaps even conflicting with state education finance equalization and reform efforts.

The issue area of special education funding formulas has not been well researched--existing work on the implications and incentives for service delivery of alternative types of formulas can better be described as suggestive and exploratory rather than definitive or in-depth. The interrelationships of special and regular education funding formulas, and the interrelationships between the special education finance system and the special education service delivery system, are especially in need of further R&D. This research should consider factors such as identification and labeling incentives, data and reporting

incentives and costs, programmatic costs and incentives, and acceptability to various constituencies.

REFERENCES

Bernstein, C., Kirst, M., Hartman, W., & Marshall, R. "Financing Educational Services for the Handicapped: An Analysis of Current Research and Practices." Palo Alto, California: Management Analysis Center, Inc., December 1974.

Brewer, G. D., & Kakalik, J. S. Handicapped Children: Strategies for Improving Services. New York: McGraw-Hill, 1978.

Callahan J., & Wilken W. (Eds.). School Finance Reform: A Legislator's Handbook. Washington, D.C.: National Conference of State Legislatures, February 1976.

Clemmons, A. L. "An Assessment of Cost Variations in Selected Exemplary Special Education Programs in Six Selected Minnesota School Districts." Unpublished doctoral dissertation, University of New Mexico, 1974.

Comptroller General of the United States. "Federal Programs for Education of the Handicapped: Issues and Problems." Washington, D.C.: U.S. Government Accounting Office, Report B164031(1), December 5, 1974.

Craig, P. A. "Counting Handicapped Children: A Federal Imperative." Journal of Education Finance, Winter 1976, Vol. 1, No. 3, p. 321.

Craig, P. A., & McEachron, N. "The Development and Analysis of Base Line Data for the Estimation of Incidence of the Handicapped School Age Population," Research Note EPRC 2158-19. Menlo Park, California: Stanford Research Institute, January 3, 1975.

Fisher, G. Cost Considerations in Systems Analysis. Santa Monica, California: The Rand Corporation, R-490, December 1970. Ch. 3.

Fleischmann, M., et al. Report of the New York State Commission on the Quality, Cost, and Financing of Elementary and Secondary Education. New York, 1972, Vol. 2.

Furno, O., and Cunes, P. "Cost of Education Index, 1970-71." School Management, January 1971.

Grubb, W. N. "Cost of Education Indices: Issues and Methods." In J. Callahan & W. Wilken (Eds.). School Finance Reform: A Legislator's Handbook. Washington, D.C.: National Conference of State Legislatures, February 1976.

Haggart, S. Program Cost Analysis in Education Planning. Santa Monica, California: The Rand Corporation, P-4744, December 1971.

Johns, R., & Alexander, K. Alternative Programs for Financing Education. Gainesville, Florida: University of Florida, National Educational Finance Project, Vol. 5, 1971.

Leppert, J., et al. "Pupil Weighting Programs in School Finance Reform." In J. Callahan & W. Wilkin. School Finance Reform: A Legislator's Handbook. Washington, D.C.: National Conference of State Legislators, February 1976.

Marinelli, J. "Critical Issues in the Financing of Education for the Handicapped." Journal of Education Finance, Fall 1975, pp. 246-269.

Marinelli, J. J. "Financing the Education of Exceptional Children." In F. Weintraub et al. (Eds.). Public Policy and the Education of Exceptional Children. Reston, Virginia: The Council for Exceptional Children, 1976.

McLure, W. "Pupil Weightings Investment Differentials." Journal of Education Finance. Summer 1976, pp. 72-82.

McLure, W., et al., "Special Education: Needs--Costs--Methods of Financing." Urbana, Illinois: Bureau of Educational Research, University of Illinois, May 1975.

Mercer, J. R. Labelling the Mentally Retarded. Berkeley: University of California Press, 1973.

Metz, A., Ford N., & Silverman, L. "Study of Excess Costs of Educating Handicapped Pupils." Washington, D.C.: National Center for Educational Statistics, Report 75-223, U.S. Department of Health, Education, and Welfare, 1975.

"A Model for the Determination of the Cost of Special Education as Compared with that for General Education." Ernst & Ernst. Chicago, Illinois, February 1974).

National Advisory Committee on the Handicapped. "The Unfinished Revolution: Education for the Handicapped--1976 Annual Report. Washington, D.C.: U.S. Department of Health, Education and Welfare, 1976.

National Center for Educational Statistics. "Financial Accounting: Classifications and Standard Terminology for Local and State School Systems--1973," State Educational Records and Reports Series: Handbook II, Revised. Washington, D.C.: U.S. Department of Health, Education, and Welfare, Publication No. (OE) 73-11800, 1973.

National Center for Health Statistics. Report Series 11. Washington, D.C.: U.S. Department of Health, Education, and Welfare.

Rossmiller, R. A. et al. Educational Programs for Exceptional Children: Resource Configurations and Costs. Madison, Wisconsin: Department of Educational Administration, the University of Wisconsin, August 1970.

Tarjan, G., et al. "Natural History of Mental Retardation: Some Aspects of Epidemiology. American Journal of Mental Deficiency, Vol. 77, No. 4, pp. 369-79, 1973.

Taylor, G. "The Special Costs of Special Education," Reston, Virginia: Report on the 1973 Airlie House Conference, sponsored by the Council for Exceptional Children, February 28-March 1, 1973.

Thomas, M. A. "Finance: Without Which There is No Special Education." Exceptional Children, Vol. 39, March 1973.

Weintraub, F., et al. (Eds.). Public Policy and the Education of Exceptional Children. Reston, Virginia: The Council for Exceptional Children, 1976.

Wilken, W. H., et al. "State Aid for Special Education: Who Benefits?" Washington, D.C.: National Foundation for the Improvement of Education and the National Conference of State Legislatures, May 21, 1976.